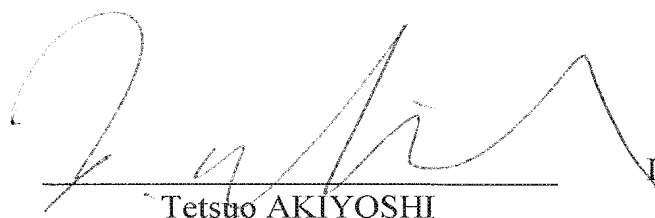# VERIFICATION OF A TRANSLATION

I, Tetsuo AKIYOSHI, of 5th Floor, Shintoshicenter Bldg., 24-1, Tsurumaki 1-chome, Tama-shi, Tokyo 206-0034 Japan, declare that I am well acquainted with both the Japanese and English languages, and that the attached is an accurate translation, to the best of my knowledge and ability, of the Japanese Patent Application No. 2004-029624 filed on February 5, 2004.

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[NAME OF DOCUMENT] SPECIFICATION

[Title of the invention]

TERMINAL APPARATUS AND RECEIVED DATA DISPLAY METHOD

[SCOPE OF CLAIMS FOR PATENT]

5   [Claim 1] A terminal apparatus comprising:

a receiving section that receives distribution data containing cell information, which is information for identifying each cell;

a data sort section that, based on said cell information contained in said distribution data received by said receiving section, and information of an own cell, determines a priority of said distribution data, and arranges said distribution data in order starting with distribution data for which said priority is highest; and

a display section that displays said distribution data in an order in which it has been arranged by said data sort section.

[Claim 2] The terminal apparatus according to claim 1, wherein said data sort section makes a priority of said distribution data containing said cell information indicating the own cell the highest priority, and among said distribution data containing said cell information indicating other cells, arranges said distribution data so that the farther a cell is from the own cell, the lower is its priority.

[Claim 3] The terminal apparatus according to claim 2, wherein:

said receiving section receives said distribution data containing location information which is information indicating a location for each area narrower than said cell information, and said cell information; and

said data sort section, among said distribution data containing said cell information indicating the own cell, arranges said distribution data so that the nearer a location of said location information is to its own location, the higher a priority thereof is made.

[Claim 4] The terminal apparatus according to any one of claims 1 to 3, further comprising a received signal strength measuring section that measures received signal strength in each cell from a received signal,

wherein said data sort section arranges said distribution data so that the higher the received signal strength measured by said received signal strength measuring section of a cell indicated by said cell information contained in said distribution data, the higher a priority thereof is made.

[Claim 5] The terminal apparatus according to any one of claims 1 to 4, wherein said display

section displays said distribution data for which said priority is greater than or equal to a threshold value.

[Claim 6] The terminal apparatus according to any one of claims 1 to 4, further comprising a display switching section that selects a partial-display mode in which said distribution data for which said priority is greater than or equal to a threshold value is displayed by said display section, or a full-display mode in which all received said distribution data is displayed by said display section,

wherein said display section displays distribution data for which said priority is greater than or equal to a threshold value when said partial-display mode is selected by said display switching section, and displays all received distribution data when said full-display mode is selected by said display switching section.

[Claim 7] The terminal apparatus according to any one of claims 1 to 6, further comprising a channel selection section that selects a channel based on information of the own cell, said cell information contained in said distribution data received by said receiving section and channel information which is information of a channel that distributes broadcast program data,

wherein said display section first displays said broadcast program data distributed using said channel selected by said channel selection section.

[Claim 8] The terminal apparatus according to claim 7, wherein said channel selection section selects a channel of said channel information contained in said distribution data containing said cell information of the own cell.

[Claim 9] A distribution server that transmits said distribution data to the terminal apparatus according to any one of claims 1 to 6, said distribution server comprising:

a location information providing section that includes said cell information in content; and

a transmitting section that transmits said content in which said cell information has been included by said location information providing section to said terminal apparatus as said distribution data.

[Claim 10] A received data display method comprising:

a step of receiving distribution data containing cell information, which is information for identifying each cell;

a step of, based on said cell information contained in said distribution data received by said receiving section, and information of an own cell,

determining a priority of said distribution data, and arranging said distribution data in order starting with distribution data for which said priority is highest; and

5   a step of displaying said distribution data in an order in which it has been arranged by said data sort section.

[Claim 11] The received data display method according to claim 10, wherein said data sort

10   section makes a priority of said distribution data containing said cell information indicating the own cell the highest priority, and among said distribution data containing said cell information indicating other cells, arranges said distribution

15   data so that the farther a cell is from the own cell, the lower is its priority.

[Claim 12] The received data display method according to claim 11, wherein:

said receiving section receives said

20   distribution data containing location information which is information indicating a location for each area narrower than said cell information, and said cell information; and

said data sort section, among said

25   distribution data containing said cell information indicating the own cell, arranges said distribution data so that the nearer a location of said location

information is to its own location, the higher a
priority thereof is made.

[Claim 13] The received data display method
according to any one of claims 10 to 12, further
comprising a step of measuring received signal
strength in each cell from a received signal,

wherein said distribution data is arranged so
that the higher the measured received signal
strength of a cell indicated by said cell
information contained in said distribution data,
the higher a priority thereof is made.

[Claim 14] The received data display method
according to any one of claims 10 to 13, wherein said
distribution data for which said priority is greater
than or equal to a threshold value is displayed.

[Claim 15] The received data display method
according to any one of claims 10 to 13, further
comprising a step of selecting a partial-display
mode in which said distribution data for which said
priority is greater than or equal to a threshold
value is displayed, or a full-display mode in which
all received said distribution data is displayed,

wherein distribution data for which said
priority is greater than or equal to a threshold
value is displayed when said partial-display mode
is selected, and all received distribution data is
displayed when said full-display mode is selected.

[Claim 16]   The received data display method according to any one of claims 10 to 15, further comprising a step of selecting a channel based on information of the own cell, said cell information contained in said received distribution data and channel information which is information of a channel that distributes broadcast program data, wherein said broadcast program data distributed using selected said channel is displayed first.

[Claim 17]   The received data display method according to claim 16, wherein a channel of said channel information contained in said distribution data containing said cell information of the own cell is selected.

[Detailed description of the Invention]

[Technical Field of the Invention]

[0001]

The present invention relates to a terminal apparatus and received data display method, and relates, for example, to a terminal apparatus and received data display method used in a service whereby advertisements and suchlike distribution data are distributed to a terminal apparatus from a distribution server.

[Prior Art]

[0002]

In third-generation mobile communication systems, a broadcasting service is known whereby distribution data is simultaneously transmitted to a plurality of mobile terminals (see Patent Document 1, for example).

[0003]

FIG.24 is a block diagram showing the configuration of a communication system in a conventional broadcasting system in which distribution data is transmitted. FIG.24, location information transmitting apparatus 10 is equipped with transmitting/receiving section 11, control section 12, storage section 13, and location acquisition section 14.

[0004]

Transmitting/receiving section 11 is used when transmitting/receiving movement-related information such as location information and location information dependent message information. Control section 12 includes a clock, CPU, and so forth, and performs overall control of the various sections. In storage section 13, movement-related information is stored associated with transmission conditions.

[0005]

In location acquisition section 14, location measurement apparatus 15 receives a plurality of

electromagnetic waves transmitted from a plurality

of satellites or the like, calculates the mobile

location of mobile device 16 from the received power

values of these electromagnetic waves, creates

5   location information from this calculated data, and

passes this location information to storage section

13.   Mobile   terminal   17   receives   desired

movement-related   information   based   on   the

transmission conditions from location information

10   transmitting apparatus 10.

[Patent   Document   1]   Japanese   Patent

Application Unexamined Publication No.2002-165264

[Problems   to   be   Solved   by   the   Invention]

[0006]

15   However,   with   a   conventional   terminal

apparatus and received data display method, it is

necessary for distribution data to be edited for

each mobile device individually on the distribution

end   based   on   the   locations   of   mobile   devices

20   measured on the distribution end, and the associated

costs   are   a   problem.   Also,   with   a   conventional

terminal apparatus and received data display method,

if   the   distribution   end   distributes   distribution

data   without   performing   editing   on   an   individual

25   basis   in   order   to   reduce   costs,   there   is   a   problem

in that a user who views distribution data received

by   a   mobile   device   must   search   for   necessary

information among all the received distribution data, and thus necessary information cannot be found speedily.

[0007]

5   In view of the above circumstances, the present invention has been made, and an object of the present invention is to provide a terminal apparatus and received data display method that enable costs to be reduced and necessary information to be found

10   speedily by editing distribution data in the terminal apparatus and not editing distribution data on the distribution end.

        [Means for Solving the Problems]

        [0008]

15   A terminal apparatus of the present invention adopts a configuration including a receiving section that receives distribution data containing cell information, which is information for identifying each cell; a data sort section that,

20   based on the cell information contained in the distribution data received by the receiving section, and information of an own cell, determines a priority of the distribution data, and arranges the distribution data in order starting with

25   distribution data for which the priority is highest; and a display section that displays the distribution data in an order in which it has been arranged by

the data sort section.

[0009]

        According to this configuration, by arranging
and displaying distribution data in order starting
with distribution data for which the priority is
highest based on cell information and information
of the own cell, distribution data does not have to
be edited on the distribution end, enabling costs
to be reduced and a viewer to find necessary
information speedily.

[0010]

        The terminal apparatus of the present
invention according to the above configuration
adopts a configuration wherein the data sort section
makes a priority of the distribution data containing
the cell information indicating the own cell the
highest priority, and among the distribution data
containing the cell information indicating other
cells, arranges the distribution data so that the
farther a cell is from the own cell, the lower is
its priority.

[0011]

        According to this configuration, in addition
to the aforementioned effects, distribution data in
the own cell is displayed as highest-priority
information, enabling a viewer to find distribution
data in the cell with which communication is

performed by use of the terminal apparatus speedily.

[0012]

The terminal apparatus of the present invention according to the above configuration adopts a configuration wherein the receiving section receives the distribution data containing location information which is information indicating a location for each area narrower than the cell information, and the cell information; and the data sort section, among the distribution data containing the cell information indicating the own cell, arranges the distribution data so that the nearer a location of the location information is to its own location, the higher a priority thereof is made.

[0013]

According to this configuration, in addition to the aforementioned effects, received distribution data is arranged for each cell according to the priority, and regarding distribution data with the highest priority, distribution data is arranged according to the priority based on location information of an area narrower than the cell and the own location, so that priorities can be assigned with greater precision, enabling a viewer to find necessary information more speedily.

[0014]

The terminal apparatus of the present invention according to the above configuration adopts a configuration further comprising a received signal strength measuring section that measures received signal strength in each cell from a received signal, wherein the data sort section arranges the distribution data so that the higher the received signal strength measured by the received signal strength measuring section of a cell indicated by the cell information contained in the distribution data, the higher a priority thereof is made.

[0015]

According to this configuration, in addition to the aforementioned effects, distribution data can be arranged using received signal strength without comparing cell information with information of the own cell, rendering processing for grasping the own cell and processing for comparing cell information with information of the own cell, and thereby enabling the processing load to be reduced.

[0016]

The terminal apparatus of the present invention according to the above configuration adopts a configuration wherein the display section displays the distribution data for which the

priority is greater than or equal to a threshold value.

[0017]

According to this configuration, in addition to the aforementioned effects, unnecessary distribution data is not displayed, enabling a viewer to find necessary distribution data speedily.

[0018]

The terminal apparatus of the present invention according to the above configuration adopts a configuration further comprising a display switching section that selects a partial-display mode in which the distribution data for which the priority is greater than or equal to a threshold value is displayed by the display section, or a full-display mode in which all received the distribution data is displayed by the display section, wherein the display section displays distribution data for which the priority is greater than or equal to a threshold value when the partial-display mode is selected by the display switching section, and displays all received distribution data when the full-display mode is selected by the display switching section.

[0019]

According to this configuration, in addition

to the aforementioned effects, the partial-display mode and the full-display mode can be selected, switched and displayed, so that a user wishing to view only high-priority distribution data can find necessary information speedily by not having unnecessary distribution data displayed, and a user can also view all distribution data when wishing to do so, thus enabling distribution data to be displayed in an easy-to-view manner.

[0020]

The terminal apparatus of the present invention according to the above configuration adopts a configuration further comprising a channel selection section that selects a channel based on information of the own cell, the cell information contained in the distribution data received by the receiving section and channel information which is information of a channel that distributes broadcast program data, wherein the display section first displays the broadcast program data distributed using the channel selected by the channel selection section.

[0021]

According to this configuration, in addition to the aforementioned effects, a broadcast program distributed using the channel selected based on information of the own cell, cell information and

channel information is first displayed, enabling a state in which no broadcast program is displayed to be eliminated during the period until the user selects a broadcast program.

[0022]

The terminal apparatus of the present invention according to the above configuration adopts a configuration wherein the channel selection section selects a channel of the channel information contained in the distribution data containing the cell information of the own cell.

[0023]

According to this configuration, in addition to the aforementioned effects, a broadcast program distributed in a channel of channel information contained in distribution data containing cell information of the own cell is displayed first, enabling the user to view the most necessary broadcast program speedily.

[0024]

A distribution server of the present invention is a distribution server that transmits the distribution data to any one of the above described terminal apparatus, and the distribution server adopts a configuration a location information providing section that includes the cell information in content; and a transmitting section

that transmits the content in which the cell information has been included by the location information providing section to the terminal apparatus as the distribution data.

5   [0025]

According to this configuration, the terminal apparatus on the receiving end can arrange distribution data only by transmitting the content and position information to be associated with each

10   other, so that distribution data does not have to be edited on the distribution end, enabling costs to be reduced.

[0026]

A received data display method of the present

15   invention includes a step of receiving distribution data containing cell information, which is information for identifying each cell; a step of, based on the cell information contained in the distribution data received by the receiving section,

20   and information of an own cell, determining a priority of the distribution data, and arranging the distribution data in order starting with distribution data for which the priority is highest; and a step of displaying the distribution data in

25   an order in which it has been arranged by the data sort section.

[0027]

According to this method, by arranging and displaying distribution data in order starting with distribution data for which the priority is highest based on cell information and information of the own cell, distribution data does not have to be edited on the distribution end, enabling costs to be reduced and a viewer to find necessary information speedily.

[0028]

In the received data display method of the present invention according to the above method, the data sort section makes a priority of the distribution data containing the cell information indicating the own cell the highest priority, and among the distribution data containing the cell information indicating other cells, arranges the distribution data so that the farther a cell is from the own cell, the lower is its priority.

[0029]

According to this method, in addition to the aforementioned effects, distribution data in the own cell is displayed as highest-priority information, enabling a viewer to find distribution data in the cell with which communication is performed by use of the terminal apparatus speedily.

[0030]

In the received data display method of the

present invention according to the above method, the receiving section receives the distribution data containing location information which is information indicating a location for each area narrower than the cell information, and the cell information; and the data sort section, among the distribution data containing the cell information indicating the own cell, arranges the distribution data so that the nearer a location of the location information is to its own location, the higher a priority thereof is made.

[0031]

According to this method, in addition to the aforementioned effects, received distribution data is arranged for each cell according to the priority, and regarding distribution data with the highest priority, distribution data is arranged according to the priority based on location information of an area narrower than the cell and the own location, so that priorities can be assigned with greater precision, enabling a viewer to find necessary information more speedily.

[0032]

The received data display method of the present invention according to the above method further includes a step of measuring received signal strength in each cell from a received signal,

wherein the distribution data is arranged so that the higher the measured received signal strength of a cell indicated by the cell information contained in the distribution data, the higher a priority

5   thereof is made.

[0033]

According to this method, in addition to the aforementioned effects, distribution data can be arranged using received signal strength without

10   comparing cell information with information of the own cell, rendering processing for grasping the own cell and processing for comparing cell information with information of the own cell, and thereby enabling the processing load to be reduced.

15   [0034]

In the received data display method of the present invention according to the above method, the distribution data for which the priority is greater than or equal to a threshold value is displayed.

20   [0035]

According to this method, in addition to the aforementioned effects, unnecessary distribution data is not displayed, enabling a viewer to find necessary distribution data speedily.

25   [0036]

The received data display method of the present invention according to the above method further

includes a step of selecting a partial-display mode in which the distribution data for which the priority is greater than or equal to a threshold value is displayed, or a full-display mode in which

5   all received the distribution data is displayed, wherein distribution data for which the priority is greater than or equal to a threshold value is displayed when the partial-display mode is selected, and all received distribution data is displayed when

10   the full-display mode is selected.

[0037]

According to this method, in addition to the aforementioned effects, the partial-display mode and the full-display mode can be selected, switched

15   and displayed, so that a user wishing to view only high-priority distribution data can find necessary information speedily by not having unnecessary distribution data displayed, and a user can also view all distribution data when wishing to do so,

20   thus enabling distribution data to be displayed in an easy-to-view manner.

[0038]

The received data display method of the present invention according to the above method further

25   includes a step of selecting a channel based on information of the own cell, the cell information contained in the received distribution data and

channel information which is information of a
channel that distributes broadcast program data,
wherein the broadcast program data distributed
using selected the channel is displayed first.

5   [0039]

        According to this method, in addition to the
aforementioned effects, a broadcast program
distributed using the channel selected based on
information of the own cell, cell information and
10   channel information is first displayed, enabling a
state in which no broadcast program is displayed to
be eliminated during the period until the user
selects a broadcast program.

[0040]

15   In the received data display method of the
present invention according to the above method, a
channel of the channel information contained in the
distribution data containing the cell information
of the own cell is selected.

20   [0041]

        According to this method, in addition to the
aforementioned effects, a broadcast program
distributed in a channel of channel information
contained in distribution data containing cell
25   information of the own cell is displayed first,
enabling the user to view the most necessary
broadcast program speedily.

[Effects of the Invention]

[0042]

According to the present invention, distribution data can be edited in a terminal apparatus, and not edited on the distribution end, enabling costs to be reduced and necessary data to be found speedily.

[Embodiments of the Invention]

[0043]

The outline of the present invention is to determine, based on cell information (cell ID) contained in distribution data and information of an own cell, a priority of the distribution data and to arrange and display the distribution data in order starting with distribution data for which the priority is highest.

[0044]

Now, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0045]

(Embodiment 1)

FIG.1 is a block diagram showing the configuration of terminal apparatus 100 according to Embodiment 1 of the present invention.

[0046]

Radio receiving section 102 down-converts a

received signal received by antenna 101 from radio frequency to baseband frequency, and outputs the resulting signal to data receiving section 105 and control data receiving section 103.

5   [0047]

Control data receiving section 103 extracts all control information other than application data from a received signal input from radio receiving section 102, and outputs this control information

10   to cell ID extraction section 104.

[0048]

Cell ID extraction section 104 extracts, from control information input from control data receiving section 103, the cell ID (cell

15   information) of its own cell, in which terminal apparatus 100 is currently performing communication, and outputs cell ID information--that is, information as to the extracted cell ID--to data sort section 106. Here, the cell ID is an ID

20   identifying the cell, and is represented numerically so that a different numeric value is indicated for each cell.

[0049]

Data receiving section 105 extracts

25   distribution data from a received signal input from radio receiving section 102, and outputs this data to data sort section 106. The distribution data

extracted by data receiving section 105 is program selection menu information for selecting a broadcast program.

[0050]

Data sort section 106 compares the cell ID contained in the distribution data input from data receiving section 105 with the cell ID input from cell ID extraction section 104. Then, based on the result of the comparison, data sort section 106 arranges the distribution data input from data receiving section 105, and outputs this data to data format section 107.Specifically, whether or not there is distribution data containing the cell ID of the own cell in which communication is currently being performed is determined, the difference between the cell ID contained in the distribution data and the cell ID of the own cell is found, the found difference is compared with a threshold value, the priority of each distribution data is determined, and distribution data is arranged accordingly. When only distribution data containing the cell ID of the own cell is arranged, threshold value information is not necessary.

[0051]

Data format section 107 converts distribution data input from data sort section 106 to a predetermined format for display, and outputs this

converted data to display section 108.

[0052]

Display section 108 displays distribution data input from data format section 107.

[0053]

The configuration of distribution server 200 will now be described using FIG.2. FIG.2 is a block diagram showing the configuration of distribution server 200.

[0054]

A content reading section 201 reads content (multimedia data such as text, image, and voice data), and outputs this data to cell ID providing section 203. Here, content includes a plurality of arbitrary information associated with a latitude and longitude constituting location information, comprising, for example, information indicating correspondence between a store and the latitude and longitude of the store, or information indicating correspondence between regional news and the latitude and longitude of that region.

[0055]

A geographical information storage section 202 stores a table holding conversion information indicating correspondence between cell IDs and a range of latitudes and longitudes, or a formula enabling a cell ID to be found from a latitude and

longitude.

[0056]

Cell ID providing section 203 references latitude information and longitude information from content input from content reading section 201. Then, using the referenced latitude information and longitude information, cell ID providing section 203 selects a cell ID by referencing conversion information stored in geographical information storage section 202, or performing calculation using a formula. Cell ID providing section 203 then includes a cell ID selected for the contents of each content in the relevant content, and outputs this to transmitting section 204.

[0057]

Transmitting section 204 transmits content input from cell ID providing section 203 as distribution data.

[0058]

The procedure up to reception by terminal apparatus 100 of distribution data transmitted from distribution server 200 will now be described using FIG.3 and FIG.4.

[0059]

In FIG.3, Distribution server 200 outputs distribution data to core network 301. Distribution data comprises, for example, news

information #401 and restaurant information #402,
as shown in FIG.4.   In news information #401, '0x0D'
cell ID information #401a is included in the 'Tokyo
Gakuen gets through to Koshien' program selection
menu information in the first line, '0x0D' cell ID
information #401b is included in the 'Interview with
Tokyo Governor' program selection menu information
in the second line, '0x0A', '0x0B', and '0x0C' cell
ID information #401c is included in the 'Yokohama
Gakuin gets through to Koshien' program selection
menu information in the third line, '0x0A', '0x0B',
and '0x0C' cell ID information #401d is included in
the 'Interview with Prefectural Governor' program
selection menu information in the fourth line, and
all cell ID information #401e indicated by '*' is
included   in   the   'Lower   House   Vote   News   Flash'
program selection menu information in the fifth line.
Thus, the various items of program selection menu
information include cell ID information.

[0060]

A cell ID is expressed as a hexadecimal number,
with '0x0A' representing '10' when converted to
decimal, '0x0B' representing '11', and '0x0C'
representing '12'.   It is therefore possible to
perform hexadecimal or decimal subtraction between
cell IDs, and determine that the cell for which the
subtraction result is smallest between the cell ID

of the own cell and the cell IDs of other cells is
the other cell nearest the own cell. The present
invention is not limited to expression of cell IDs
as hexadecimal numbers, and it is possible to use
any numeric notation such as binary, for example,
to represent a cell ID. The same applies to
restaurant information #402 as to news information
#401, and therefore a description relating to
restaurant information #402 is omitted here.

[0061]

Next, the distribution data in FIG.4
distributed from distribution server 200 arrives at
network control apparatuses 302a and 302b via core
network 301. Network control apparatuses 302a and
302b can transmit distribution data to a plurality
of base station apparatuses, with network control
apparatus 302a transmitting distribution data to
base station apparatus 303a of cell #310 (for
example, the Shonan area), and network control
apparatus 302b transmitting distribution data to
base station apparatus 303b of cell #311 (for
example, the Yokohama area), base station apparatus
303c of cell #312 (for example, the Kawasaki area),
and base station apparatus 303d of cell #313 (for
example, the Shinagawa area). Each base station
apparatus then transmits the distribution data to
a terminal apparatus 100 performing communication

within the cell.

[0062]

The operation of terminal apparatus 100 that receives distribution data will now be described using FIG.5 through FIG.7. FIG.5 is a flowchart showing the operation of terminal apparatus 100, and FIG.6 and FIG.7 are drawings showing distribution data distributed for display on terminal apparatus 100.

[0063]

First, terminal apparatus 100 starts a receive operation, and in the case of distribution data such as that shown in FIG.4, for example, reads one item of the restaurant information distribution data shown in FIG.6 (step ST501), and data receiving section 105 extracts the distribution data. In this case, distribution data is arranged in an order determined arbitrarily by the distribution data creator. At the same time, control data receiving section 103 extracts control information. Then cell ID extraction section 104 extracts the cell ID of the own cell in which it is itself performing communication, and obtains the cell ID (step ST502).

[0064]

Next, data sort section 106 compares the cell ID contained in the distribution data with the extracted cell ID, and determines whether or not

they are the same cell ID (step ST503). If they are the same cell ID, data sort section 106 makes the priority of the distribution data containing the same cell ID 'high' (step ST504). On the other hand,

5   if they are not the same cell ID, data sort section 106 determines whether or not the difference between the cell ID contained in the distribution data and the extracted cell ID is less than or equal to a threshold value (step ST505). If the difference

10 between the cell ID contained in the distribution data and the extracted cell ID is less than or equal to the threshold value, data sort section 106 makes the priority of the distribution data containing the cell ID that is less than or equal to the threshold

15 value 'medium' (step ST506). If the difference between the cell ID contained in the distribution data and the extracted cell ID is not less than or equal to the threshold value, data sort section 106 makes the priority of the distribution data

20 containing the cell ID that is not less than or equal to the threshold value 'low' (step ST507).

[0065]

Next, data sort section 106 arranges the distribution data based on the respective

25 priorities (step ST508). For example, if terminal apparatus 100 performing communication in Yokohama area cell #311 with a cell ID of '0x0B' receives

restaurant information #401 in FIG.6, data sort section 106 selects program selection menu information #604 containing the '0x0B' cell ID and makes its priority 'high', and puts program

5   selection menu information #604 in top place, as shown in FIG.7. Also, as a result of performing subtraction between cell IDs, data sort section 106 places program selection menu information #605 of Shonan area cell #310 with a cell ID of '0x0A', and

10   program selection menu information #603 of Kawasaki area cell #312 with a cell ID of '0x0C', the nearest to Yokohama area cell #311, after program selection menu information #604. Also, data sort section 106 puts program selection menu information #602 of

15   Shinagawa area cell #313 with a cell ID of '0x0D', the nearest to Yokohama area cell #311 after Shonan area cell #310 and Kawasaki area cell #312, in next place after program selection menu information #603. Furthermore, data sort section 106 puts program

20   selection menu information #601 of an Odaiba area cell (not shown) with a cell ID of '0x0E', the farthest from Yokohama area cell #311, in next place after program selection menu information #602.

[0066]

25   Data format section 107 then converts the distribution data to a predetermined format. For example, when terminal apparatus 100 has arranged

distribution data as shown in FIG.8, the
distribution data in FIG.7 is converted to the HTML
format shown in FIG.8 that can be displayed by a
general-purpose WWW browser. Next, display
section 108 displays the distribution data (step
ST509). Terminal apparatus 100 then determines
whether or not distribution data reception
processing is to be terminated (step ST510). If
reception processing is not to be terminated, the
processing in step ST501 through step ST509 is
repeated. On the other hand, if reception
processing is to be terminated, distribution data
reception is not performed.

[0067]

FIG.9 is a drawing showing the display on
display section 108 of terminal apparatus 100 when
terminal apparatus 100 is performing communication
in cell #311, when cell #311 is a Yokohama area cell,
for example. Distribution data news information
#401, in which distribution data arranged as shown
in FIG.7 has been converted as shown in FIG.8, is
displayed as news information #901 as shown in FIG.9,
and distribution data restaurant information #402,
in which distribution data arranged as shown in
FIG.7 has been converted as shown in FIG.8, is
displayed as restaurant information #902 as shown
in FIG.9. As shown in FIG.9, on terminal apparatus

100 performing communication in cell #311, Yokohama related news information and Yokohama restaurant information are displayed preferentially as high-priority information.

5   [0068]

FIG.10 is a drawing showing the display on display section 108 of terminal apparatus 100 when terminal apparatus 100 is performing communication in cell #313, when cell #313 is a Shinagawa area cell,

10   for example. In this case, distribution data news information #401 is displayed as news information #1001 as shown in FIG.10, and distribution data restaurant information #402 is displayed as restaurant information #1002 as shown in FIG.10.

15   As shown in FIG.10, in terminal apparatus 100 performing communication in cell #313, Shinagawa related news information and Shinagawa restaurant information are displayed preferentially as high-priority information. Any method can be used

20   to perform preferential display, such as displaying items of information from top to bottom in high-to-low priority order, or displaying only high-priority information.

[0069]

25   Also, by providing a switching section such as a switch in display section 108 in FIG.1, it is also possible for the priority of 'low' priority news

information and restaurant information or 'medium'
priority news information and restaurant
information, and the priority of 'high' priority
news information and restaurant information, to be

5   changed, and 'low' priority news information and
restaurant information, or 'medium' priority news
information and restaurant information, to be
displayed as high-priority information. That is to
say, by operating the switching section, a user can

10   display news information and restaurant information
associated with the cell ID of any cell among cell
#310 through cell #313 as high-priority information,
irrespective of the cell in which terminal apparatus
100 is performing communication.

15   [0070]

Thus, according to Embodiment 1, by arranging
and displaying distribution data based on the
results of comparison between the cell ID of the own
cell and cell IDs contained in various distribution

20   data, distribution data can be edited in a terminal
apparatus, and not edited on the distribution end,
enabling costs to be reduced. Also, according to
Embodiment 1, a terminal apparatus arranges
distribution data automatically using cell IDs,

25   enabling a user to find the most necessary
information speedily. Furthermore, according to
Embodiment 1, when distribution data associated

with the cell ID of any cell among cell #310 through cell #313 is displayed as high-priority information by means of user selection, the user can speedily find distribution data associated with any location other than the location where the user is currently performing communication.

[0071]

    (Embodiment 2)

    FIG.11 is a block diagram showing the configuration of a terminal apparatus 1100 according to Embodiment 2 of the present invention.

[0072]

    Terminal apparatus 1100 according to Embodiment 2 has data sort section 1101 as shown in FIG.11 instead of data sort section 106 in terminal apparatus 100 according to Embodiment 1 shown in FIG.1. Parts in FIG.11 constituting the same configuration elements as in FIG.1 are assigned the same codes as in FIG.1, and descriptions thereof are omitted. The configuration of a distribution server according to Embodiment 2 is identical to that in FIG.2, and therefore a description thereof is also omitted here.

[0073]

    Data sort section 1101 compares the cell ID contained in distribution data with a cell ID input from cell ID extraction section 104. Then, based

on the result of the comparison and the latitude and longitude at which terminal apparatus 1100 is performing communication measured using GPS or the like, data sort section 1101 arranges the distribution data input from data receiving section 105, and outputs this data to a data format section 107. Specifically, whether or not a cell ID identical to a cell ID contained in the distribution data is present in the cell IDs input from cell ID extraction section 104 is determined, the difference between the cell ID contained in the distribution data and the cell ID input from cell ID extraction section 104 is found, the found difference is compared with a threshold value, the priority of each distribution data is determined, and the various distribution data are arranged into predetermined groups designated 'high', 'medium', and 'low' priority. Data sort section 1101 then compares the latitude and longitude of each distribution data with the latitude and longitude at which terminal apparatus 1100 is performing communication with respect to each group, and arranges distribution data within each group based on the comparison result. When only distribution data containing the cell ID of the own cell is arranged by data sort section 1101, threshold value information is not necessary. The procedure up to

reception by terminal apparatus 1100 of distribution data distributed from distribution server 200, and the operation of terminal apparatus 1100, are the same as in FIG.3 and FIG.5, and
5 therefore a description thereof is omitted here.
[0074]

FIG.12 is a drawing showing distribution data distributed from distribution server 200. Distribution data comprises, for example, news
10 information #1201 and restaurant information #1202, as shown in FIG.12. Restaurant information #1202 includes latitude information #1203, which is information as to latitude, and longitude information #1204, which is information as to
15 longitude. The distribution data shown in FIG.12 is distributed from distribution server 200 to terminal apparatus 1100.
[0075]

FIG.13 and FIG.14 are drawings showing
20 distribution data displayed on display section 108 of terminal apparatus 1100. FIG.14 shows distribution data displayed on terminal apparatus 1100 when terminal apparatus 1100 is performing communication at north latitude (N) '35N27' and east
25 longitude (E) '139E37', and FIG.15 shows distribution data displayed on terminal apparatus 1100 when terminal apparatus 1100 is performing

communication at north latitude (N) `35N28` and east
longitude (E) `139E38`.   In FIG.13 and FIG.14,
distribution data news information #1201 shown in
FIG.13 is displayed as news information #1301 and
#1401, and distribution data restaurant information
#1202 shown in FIG.12 is displayed as restaurant
information #1302 and #1402.   As shown in FIG.13,
when cell #311 is a Yokohama area cell, on terminal
apparatus 1100 performing communication at north
latitude (N) `35N27` and east longitude (E) `139E37`
in cell #311, Yokohama related news information
#1301 and Yokohama restaurant information #1302 are
displayed   preferentially   as   high-priority
information,   and   in   preferentially   displayed
Yokohama restaurant information #1302, a restaurant
at north latitude (N) `35N27` and east longitude (E)
`139E37` is further displayed preferentially as
high-priority information.   Also,   as   shown   in
FIG.14,   on   terminal   apparatus   1100   performing
communication at north latitude (N) `35N28` and east
longitude   (E)   `139E38`   in   cell   #311,   Yokohama
related   news   information   #1401   and   Yokohama
restaurant   information   #1402   are   displayed
preferentially as high-priority information, and in
preferentially   displayed   Yokohama   restaurant
information #1402, a restaurant at north latitude
(N) `35N28` and east longitude (E) `139E38` is

further displayed preferentially as high-priority information.

[0076]

    Thus, according to Embodiment 2, in addition to providing the effects of Embodiment 1 described above, priorities can be assigned with greater precision by using latitudes and longitudes, enabling a user to find necessary information still more speedily.

[0077]

    In Embodiment 2, the use of latitude and longitude has been assumed as location information employed when distribution data is arranged by data sort section 1101, but this is not a limitation, and it is possible to use any location information, such as a zip code or the like, on condition that this location information is the same as the location information associated with content information.

[0078]

    (Embodiment 3)

    FIG.15 is a block diagram showing the configuration of a terminal apparatus 1500 according to Embodiment 3 of the present invention.

[0079]

    In terminal apparatus 1500 according to Embodiment 3, as shown in FIG.15, a transmission status monitoring section 1501 and a cell ID storage

section 1503 are added to the configuration of terminal apparatus 100 according to Embodiment 1 shown in FIG.2, a cell ID extraction section 1502 is provided instead of cell ID extraction section

5   104, and a data sort section 1504 is provided instead of data sort section 106. Parts in FIG.15 constituting the same configuration elements as in FIG.1 are assigned the same codes as in FIG.1, and descriptions thereof are omitted. The

10   configuration of a distribution server according to Embodiment 3 is identical to that in FIG.2, and therefore a description thereof is also omitted here.

[0080]

15   Transmission status monitoring section 1501 measures the received signal strength of a received signal input from control data receiving section 103, and outputs the result of the measurement to cell ID storage section 1503.

20   [0081]

         Cell ID extraction section 1502 extracts, from control information input from control data receiving section 103, all cell IDs for which reception is currently possible containing the cell

25   ID of the own cell in which terminal apparatus 1500 is currently performing communication, and outputs cell ID information--that is, information on the

extracted cell IDs--to cell ID storage section 1503.

[0082]

Using the extracted cell ID information input from cell ID extraction section 1502 and the measurement result input from transmission status monitoring section 1501, cell ID storage section 1503 associates cell IDs with received signal strength and creates data sort information, and also stores a table that holds the data sort information.

[0083]

Using cell ID information contained in distribution data input from the data receiving section, data sort section 1504 references the data sort information stored in cell ID storage section 1503, and arranges the distribution data so that distribution data associated with a cell ID for which the received signal strength is high has a proportionally higher priority.

[0084]

The operation of terminal apparatus 1500 will now be described using FIG.16 and FIG.17. FIG.16 is a flowchart showing the operation of terminal apparatus 1500, and FIG.17 is a drawing showing data sort information.

[0085]

First, terminal apparatus 1500 starts a receive operation, and in the case of distribution

data such as that shown in FIG.4, for example, reads one item of the restaurant information distribution data shown in FIG.6 (step ST1601), and data receiving section 105 extracts the distribution data. At the same time, control data receiving section 103 extracts control information. Then cell ID extraction section 1502 extracts the cell IDs of all cells for which reception is currently possible containing the cell ID of the own cell in which the terminal apparatus itself is currently performing communication, and transmission status monitoring section 1501 measures the received signal strength and monitors the transmission status (step ST1602).

[0086]

Next, cell ID storage section 1503 updates the cell ID correspondence table constituting data sort information (step ST1603). The cell ID correspondence table is as shown in FIG.17, for example, and cell IDs '0x0A', '0x0B', and '0x0C' extracted by cell ID extraction section 1502, and the received signal strength of each cell ID, are updated. In FIG.17, the received signal strength of cell ID '0x0B' is 38 dB, the received signal strength of cell ID '0x0A' is 36 dB, and the received signal strength of cell ID '0x0C' is 35 dB. In this case, since cell ID '0x0B' has the highest received

signal strength, terminal apparatus 1500 performs communication using the cell with cell ID '0x0B'. The cell with cell ID '0x0A' and the cell with cell ID '0x0C' are cells adjacent to the cell with cell

5   ID '0x0B', and terminal apparatus 1500 simultaneously receives signals from the cell with cell ID '0x0A' and the cell with cell ID '0x0C'.

[0087]

    Then data sort section 1504 arranges the

10   distribution data by assigning priorities so that distribution data associated with a cell ID for which the received signal strength is high has a proportionally higher priority (step ST1604). Data format section 107 then converts the

15   distribution data to a predetermined format for display, and display section 108 displays the distribution data (step ST1605). Any method can be used when distribution data is displayed, such as displaying items of information from top to bottom

20   in high-to-low priority order, as shown in FIG.9 and FIG.10, or displaying only high-priority information.

[0088]

    Terminal apparatus 1500 then determines

25   whether or not distribution data reception processing is to be terminated (step ST1606). If reception processing is not to be terminated, the

processing in step ST1601 through step ST1605 is repeated. On the other hand, if reception processing is to be terminated, distribution data reception is not performed.

5 [0089]

Thus, according to Embodiment 3, by referencing data sort information stored with the correspondence between the cell ID of a cell in which communication is currently being performed and

10 received signal strength indicated, and displaying distribution data accordingly, distribution data can be edited in a terminal apparatus, and not edited on the distribution end, enabling costs to be reduced. Also, according to Embodiment 3, a

15 terminal apparatus arranges and displays distribution data automatically using cell IDs and received signal strength, enabling a user to find the most necessary distribution data speedily. Furthermore, according to Embodiment 3,

20 distribution data is arranged using received signal strength, without comparing a cell ID extracted by cell ID extraction section 1502 with a cell ID associated with distribution data, rendering processing for comparing the cell ID of the own cell

25 with a cell ID of cell ID information contained in distribution data unnecessary, and thereby enabling the processing load to be reduced.

[0090]

In Embodiment 3, data sort information has been assumed to indicate the correspondence between a cell ID and received signal strength, but this is 5 by no means limiting, and it is possible to use data sort information indicating the correspondence between any parameter and a cell ID, such as the correspondence between a cell ID and the transmission error rate.

10 [0091]

(Embodiment 4)

FIG.18 is a block diagram showing the configuration of a terminal apparatus 1800 according to Embodiment 4 of the present invention.

15 [0092]

In terminal apparatus 1800 according to Embodiment 4, as shown in FIG.18, a display switching section 1801 is added to the configuration of terminal apparatus 100 according to Embodiment 20 1 shown in FIG.1. Parts in FIG.18 constituting the same configuration elements as in FIG.1 are assigned the same codes as in FIG.1, and descriptions thereof are omitted. The configuration of a distribution server according to Embodiment 4 is identical to 25 that in FIG.2, and therefore a description thereof is also omitted here.

[0093]

Display switching section 1801 is a switch, for
example, and controls display section 108 by means
of a user switching operation so as to switch display
between a full-display mode in which all the
5   distribution data input from data format section 107
is displayed, and a partial-display mode in which
only distribution data whose priority is greater
than or equal to a threshold value is displayed. In
partial-display mode, display switching section
10 1801 is not limited to performing control so that
distribution data whose priority is greater than or
equal to a threshold value is displayed, but can also
perform control so that only distribution data with
the highest priority is displayed.

15 [0094]

Based on display switching section 1801
control, display section 108 performs display
switching between display of all the distribution
data input from data format section 107, and display
20 of only distribution data whose priority is greater
than or equal to a threshold value among the
distribution data input from data format section 107
(for example, 'high' priority distribution data and
'medium' priority distribution data). When
25 partial-display mode is a mode in which only
distribution data with the highest priority is
displayed, display section 108 switches between

display of all the distribution data input from data

format section 107, and display of only distribution

data whose priority is greater than or equal to a

threshold value among the distribution data input

5   from data format section 107 (for example, 'high'

priority distribution data), based on display

switching section 1801 control.

[0095]

       FIG.19 is a drawing showing a display on display

10   section 108 in partial-display mode, and FIG.21 is

a drawing showing a display on display section 108

in full-display mode. If, for example, the user

wishes to view all the received distribution data

while viewing a display in which only part of the

15   received distribution data is displayed, as shown

in FIG.19, the user can cause all the received

distribution data to be displayed as shown in FIG.20

by operating display switching section 1801. Apart

from the switchover between displaying all the

20   distribution data or part of the distribution data

received in step ST509 in FIG.5, the operation of

terminal apparatus 1800 is the same as in FIG.5, and

therefore a description thereof is omitted here.

[0096]

25   Thus, according to Embodiment 4, in addition

to providing the effects of Embodiment 1 described

above, switching is performed between display of all

the received distribution data and display of part of the received distribution data, so that a user wishing to view only high-priority distribution data can find necessary information speedily by not having unnecessary distribution data displayed, and a user can also view all distribution data when wishing to do so, thus enabling distribution data to be displayed in an easy-to-view manner.

[0097]

(Embodiment 5)

FIG.21 is a block diagram showing the configuration of a terminal apparatus 2100 according to Embodiment 5 of the present invention.

[0098]

In terminal apparatus 2100 according to Embodiment 5, as shown in FIG.22, a channel selection section 2101 is added to the configuration of terminal apparatus 100 according to Embodiment 1 shown in FIG.1. Parts in FIG.21 constituting the same configuration elements as in FIG.1 are assigned the same codes as in FIG.1, and descriptions thereof are omitted.

[0099]

Cell ID extraction section 104 extracts the cell ID of the own cell, in which terminal apparatus 2100 is currently performing communication, from control information input from control data

receiving section 103, and outputs cell ID
information--that is, information as to the
extracted cell ID--to data sort section 106 and
channel selection section 2101.

5 [0100]

Data receiving section 105 extracts
distribution data from a received signal input from
radio receiving section 102, and outputs this data
to data sort section 106. The distribution data
10 extracted by data receiving section 105 is program
selection menu information for selecting a
broadcast program and data of broadcast programs.
Program selection menu information includes channel
information--that is, information on channels on
15 which broadcast program data is distributed--and
cell ID information, and program guide information
is composed of a plurality of program selection
menus. Data of each broadcast program is received
as a received signal of a different channel for each
20 broadcast program.

[0101]

Data sort section 106 compares the cell ID
contained in each program selection menu of program
guide information input from data receiving section
25 105 with the cell ID input from cell ID extraction
section 104. Then, based on the result of the
comparison, data sort section 106 arranges the

program selection menus within the program guide
information input from data receiving section 105.
Data sort section 106 then outputs program guide
information in which the program selection menus
5   have been arranged, and data of each broadcast
program, to channel selection section 2101.
Specifically, whether or not there is a program
selection menu containing the cell ID of the own cell
in which communication is currently being performed
10   is determined, the difference between the cell ID
contained in each program selection menu and the
cell ID of the own cell is found, the found
difference is compared with a threshold value, the
priority of each program selection menu is
15   determined, and program selection menus are
arranged and output to channel selection section
2101 together with the data of each broadcast
program.   When only program selection menus
containing the cell ID of the own cell are arranged,
20   threshold value information is not necessary.
[0102]

      Channel selection section 2101 selects a
channel based on program guide information input
from data sort section 106 and cell ID information
25   input from cell ID extraction section 104.
Specifically, channel selection section 2101
selects a channel of channel information contained

in a program selection menu containing information of the cell ID of the own cell. Then channel selection section 2101 outputs information as to the selected channel and program guide information input from data sort section 106 to data format section 107.

[0103]

Display section 108 displays program guide information input from data format section 107. Furthermore, display section 108 displays data of a broadcast program distributed using the selected channel together with the program guide information, according to information on the channel selected by channel selection section 2101 input from data format section

[0104]

The operation of terminal apparatus 2100 that receives distribution data will now be described using FIG.22 and FIG.23. FIG.22 is a drawing showing distribution data displayed on terminal apparatus 2100, and FIG.23 is a drawing showing program guide information of distribution data received by terminal apparatus 2100.

[0105]

Program guide information comprises, for example, news information #2201 and restaurant information #2202, as shown in FIG.22. In news

information #2201, `0x0D` cell ID information #2203a and `CH="001"` channel information #2204a are included in the `Tokyo Gakuen gets through to Koshien` program selection menu information in the first line, `0x0D` cell ID information #2203b and `CH="001"` channel information #2204b are included in the `Interview with Tokyo Governor` program selection menu information in the second line, `0x0A`, `0x0B`, and `0x0C` cell ID information #2203c and `CH="002"` channel information #2204c are included in the `Yokohama Gakuin gets through to Koshien` program selection menu information in the third line, `0x0A`, `0x0B`, and `0x0C` cell ID information #2203d and `CH="002"` channel information #2204d are included in the `Interview with Prefectural Governor` program selection menu information in the fourth line, and all cell ID information #2203e indicated by `*` and `CH="000"` channel information #2204e are included in the `Lower House Vote News Flash` program selection menu information in the fifth line.

[0106]

Data sort section 106 arranges the distribution data based on the respective priorities. For example, if terminal apparatus 2100 performing communication in Yokohama area cell #311 with a cell ID of `0x0B` receives news

information #2201 in FIG.22, data sort section 106
selects 'Yokohama Gakuin gets through to Koshien'
and 'Interview with Prefectural Governor' program
selection menu information containing the '0x0B'
5   cell ID, makes the priority of this information
'high', and places this information at the top.
[0107]

Next, data sort section 106 takes 'Lower House
Vote News Flash' program selection menu information
10 containing all cell IDs as having the next highest
priority, and places this next after the 'Yokohama
Gakuin gets through to Koshien' and 'Interview with
Prefectural Governor' program selection menu
information.
15 [0108]

Then, by performing subtraction between cell
IDs, data sort section 106 places 'Tokyo Gakuen gets
through to Koshien' and 'Interview with Tokyo
Governor' program selection menu information
20 containing cell ID '0x0D' of the Tokyo area cell
farthest from a Yokohama area cell in news
information #2201 next after 'Lower House Vote News
Flash' program selection menu information.
[0109]

25 Furthermore, channel selection section 2101
selects channel 002 that broadcasts the 'Yokohama
Gakuen gets through to Koshien' or 'Interview with

Prefectural Governor' containing the `0x0B' cell ID.

[0110]

Next, as shown in FIG.23, in the program guide information displayed in lower screen area #2301, display section 108 displays Yokohama area cell `Yokohama Gakuin gets through to Koshien' program selection menu information #2303a at the top, displays `Interview with Prefectural Governor' program selection menu information #2303b next after program selection menu information #2303a, displays `Lower House Vote News Flash' program selection menu information #2303c common to all cells next after program selection menu information #2303b, displays Tokyo area cell `Tokyo Gakuen gets through to Koshien' program selection menu information #2303d next after program selection menu information #2303c, and displays `Interview with Tokyo Governor' program selection menu information #2303e next after program selection menu information #2303d. Furthermore, as shown in FIG.23, in upper screen area #2302, display section 108 displays broadcast program data `Yokohama Gakuin gets through to Koshien' distributed using the channel selected by channel selection section 2101.

[0111]

The user of terminal apparatus 2100 then selects (clicks) an underlined part of the program selection menu information displayed in lower screen area #2301, and the selected broad cast

5   program data is displayed in screen upper area #2302. The processing performed for restaurant information #2202 is similar to that for news information #2201 described above, and therefore, a description thereof is omitted here.

10   [0112]

Thus, according to Embodiment 5, in addition to providing the effects of Embodiment 1 described above, a channel is selected from channel information contained in a program selection menu

15   that contains the cell ID of the own cell, and program guide information display and display of broadcast programs distributed using the selected channel are performed simultaneously, enabling a state in which no broadcast program is displayed to

20   be eliminated during the period until the user selects a broadcast program. Also, according to Embodiment 5, a broadcast program distributed in a channel of channel information contained in program selection menu information containing the cell ID

25   of the own cell is displayed first, enabling the user to view the most necessary broadcast program speedily.

[0113]

In Embodiment 5, it has been assumed that a channel is selected from channel information contained in a program selection menu containing the cell ID of the own cell, but this is by no means limiting, and a channel of channel information contained in a program selection menu containing the cell ID of a cell other than the own cell may also be selected and arranged to be broadcast first. Also, it is possible for Embodiment 5 to be applied to Embodiment 2 through Embodiment 4.

[0114]

In above-described Embodiment 1 through Embodiment 5, it has been assumed that distribution data is arranged using cell IDs or network area IDs, but this is by no means limitng, and distribution data can be arranged using any location information, such as a zip code or the like. In above-described Embodiment 1 through Embodiment 5, it has been assumed that distribution data is displayed after being converted to HTML format, but this is by no means limiting, and it is possible for distribution data to be converted to any displayable format. In above-described Embodiment 1 through Embodiment 5, it has been assumed that latitude and longitude are used as location information associated with distribution data, but this is by no means limiting,

and it is possible to use any location information, such as a zip code or the like. In above-described Embodiment 1 through Embodiment 5, distribution data may be transmitted using FLUTE (File Delivery over Unidirectional Transport), and cell information can be written by using or extending a field stipulated in FLUTE, for example. FLUTE is a file transfer method currently under discussion by the IETF, and is a suitable method for transmitting metadata. In above-described Embodiment 1 through Embodiment 5, distribution data may include layout information. Layout information is control information that specifies how content is to be laid out and displayed, and SMIL (Synchronized Multimedia Integration Language), for example, can be used for this purpose. SMIL is a layout description language recommended by W3C (The World Wide Web Consortium). A cell ID can be specified in an SMIL layout, enabling layout or display content linkage to be established.

[0115]

A terminal apparatus and received data display method of the present invention have an effect of enabling costs to be reduced and necessary information to be found speedily by editing distribution data in the terminal apparatus, and not editing distribution data on the distribution end,

and are suitable for displaying distributed data.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[0116]

[FIG.1]   A   block   diagram   showing   the configuration of a terminal apparatus according to Embodiment 1 of the present invention;

[FIG.2]   A   block   diagram   showing   the configuration of a distribution server according to Embodiment 1 of the present invention;

[FIG.3]   A   schematic   diagram   showing   a network;

[FIG.4]   A drawing showing distribution data according to Embodiment 1 of the present invention;

[FIG.5]   A flowchart showing the operation of a terminal apparatus according to Embodiment 1 of the present invention;

[FIG.6]   A drawing showing distribution data according to Embodiment 1 of the present invention;

[FIG.7]   A drawing showing distribution data according to Embodiment 1 of the present invention;

[FIG.8]   A drawing showing distribution data according to Embodiment 1 of the present invention;

[FIG.9]   A drawing showing a display of the display section of a terminal apparatus according to Embodiment 1 of the present invention;

[FIG.10]   A drawing showing a display of the display section of a terminal apparatus according

to Embodiment 1 of the present invention;

[FIG.11]   A   block   diagram   showing   the
configuration of a terminal apparatus according to
Embodiment 2 of the present invention;

5   [FIG.12]   A drawing showing distribution data
according to Embodiment 2 of the present invention;

[FIG.13]   A drawing showing a display of the
display section of a terminal apparatus according
to Embodiment 2 of the present invention;

10   [FIG.14]   A drawing showing a display of the
display section of a terminal apparatus according
to Embodiment 2 of the present invention;

[FIG.15]   A   block   diagram   showing   the
configuration of a terminal apparatus according to
15   Embodiment 3 of the present invention;

[FIG.16]   A flowchart showing the operation of
a terminal apparatus according to Embodiment 3 of
the present invention;

[FIG.17]   A   drawing   showing   data   sort
20   information according to Embodiment 3 of the present
invention;

[FIG.18]   A   block   diagram   showing   the
configuration of a terminal apparatus according to
Embodiment 4 of the present invention;

25   [FIG.19]   A   drawing   showing a display of the
display section of a terminal apparatus according
to Embodiment 4 of the present invention;

[FIG.20] A drawing showing a display of the display section of a terminal apparatus according to Embodiment 4 of the present invention;

[FIG.21]   A block diagram showing the configuration of a terminal apparatus according to Embodiment 5 of the present invention;

[FIG.22] A drawing showing distribution data according to Embodiment 5 of the present invention;

[FIG.23] A drawing showing a display of the display section of a terminal apparatus according to Embodiment 5 of the present invention; and

[FIG.24]   A block diagram showing the configuration of a conventional distribution server.

[Description of the Symbols]

[0117]

100   Terminal Apparatus

102   Radio Receiving Section

103   Control Data Receiving Section

104   Cell ID Extraction Section

105   Data Receiving Section

106   Data Sort Section

107   Data Format Section

108   Display Section

[NAME OF DOCUMENT]   ABSTRACT

[Abstract]

[Object]

Distributed   data   is   not   edited   at   a
distributing end but is edited in a terminal
apparatus, thereby making it possible to reduce the
cost and to quickly retrieve necessary information.

[Overcoming Means]

A cell ID extracting part 104 extracts all the
cell IDs that can be currently received.   A data
receiving part 105 extracts distributed data.   A
data sorting part 106 compares the cell ID related
to the distributed data with the cell IDs that can
be currently received, and adds priorities to the
distributed data in such a manner that a "high"
priority is given to the distributed data related
to the same cell ID as the own cell, while the lower
priorities being given to the distributed data
related to the cell IDs of other cells that are
farther from the own cell.   A display part 108
sequentially displays the distributed data in
decreasing order of the priority.

[Selected Drawing]   FIG. 1

FIG.1

THRESHOLD VALUE INFORMATION

102 RADIO RECEIVING SECTION

103 CONTROL DATA RECEIVING SECTION

104 CELL ID EXTRACTION SECTION

105 DATA RECEIVING SECTION

106 DATA SORT SECTION

107 DATA FORMAT SECTION

108 DISPLAY SECTION

FIG.2

CONTENT INFORMATION

201 CONTENT READING SECTION

202 GEOGRAPHICAL INFORMATION STORAGE SECTION

203 CELL ID PROVIDING SECTION

204 TRANSMITTING SECTION

DISTRIBUTION DATA

FIG.4

#401

... TOKYO GAKUEN GETS THROUGH TO KOSHIEN

     INTERVIEW WITH TOKYO GOVERNOR

     YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

     INTERVIEW WITH PREFECTURAL GOVERNOR

     LOWER HOUSE VOTE NEWS FLASH

#402

... ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"

(KAWASAKI)

CHINESE RESTAURANT "HORAI" (KANNAI, YOKOHAMA)

5   JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

FIG.5

START

ST501 READ ONE DISTRIBUTION DATA ITEM

10   ST502 CURRENT CELL ID ACQUISITION

ST503 SAME CELL ID?

ST504 SET PRIORITY TO "HIGH"

ST505 CELL ID DIFFERENCE $\leqq$ THRESHOLD VALUE?

ST506 SET PRIORITY TO "MEDIUM"

15   ST507 SET PRIORITY TO "LOW"

ST508 ARRANGE DISTRIBUTION DATA

ST509 DISPLAY RECEIVED DATA

ST510 END OF RECEPTION PROCESSING?

END

20   FIG.6

#401

...   ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"

25   (KAWASAKI)

CHINESE RESTAURANT "HORAI" (KANNAI, YOKOHAMA)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

FIG.7

     CHINESE RESTAURANT "HORAI" (KANNAI, YOKOHAMA)

     JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

5   BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"
(KAWASAKI)

  ..   FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

  .   ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

10 FIG.8

     CHINESE RESTAURANT "HORAI" (KANNAI, YOKOHAMA)

     JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

     BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"
(KAWASAKI)

15 ..   FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

  .   ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

FIG.9

INFORMATION SERVICE

20 #901

[NEWS FLASHES]

LOWER HOUSE VOTE NEWS FLASH

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

INTERVIEW WITH PREFECTURAL GOVERNOR

25 TOKYO GAKUEN GETS THROUGH TO KOSHIEN

INTERVIEW WITH TOKYO GOVERNOR

#902

[RECOMMENDED RESTAURANTS]

CHINESE RESTAURANT "HORAI" (YOKOHAMA)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"

5   (KAWASAKI)

FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

FIG.10

10   INFORMATION SERVICE

#1001

[NEWS FLASHES]

LOWER HOUSE VOTE NEWS FLASH

TOKYO GAKUEN GETS THROUGH TO KOSHIEN

15   INTERVIEW WITH TOKYO GOVERNOR

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

INTERVIEW WITH PREFECTURAL GOVERNOR

#1002

[RECOMMENDED RESTAURANTS]

20   FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"

(KAWASAKI)

CHINESE RESTAURANT "HORAI" (YOKOHAMA)

25

FIG.11

THRESHOLD VALUE INFORMATION

LOCATION MEASUREMENT INFORMATION

102 RADIO RECEIVING SECTION

103 CONTROL DATA RECEIVING SECTION

104 CELL ID EXTRACTION SECTION

5   105 DATA RECEIVING SECTION

1101 DATA SORT SECTION

107 DATA FORMAT SECTION

108 DISPLAY SECTION

10   FIG.12

#1201

...   TOKYO GAKUEN GETS THROUGH TO KOSHIEN

INTERVIEW WITH TOKYO GOVERNOR

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

15   INTERVIEW WITH PREFECTURAL GOVERNOR

LOWER HOUSE VOTE NEWS FLASH

#1202

...   ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

20   BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"

(KAWASAKI)

CHINESE RESTAURANT "HORAI" (KANNAI, YOKOHAMA)

NOODLE RESTAURANT "TENTEN" (SHIN-YOKOHAMA,

YOKOHAMA)

25   ITALIAN RESTAURANT "MASTROIANNI" (YOKOHAMA

STN., YOKOHAMA)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

FIG.13

INFORMATION SERVICE

#1301

5 [NEWS FLASHES]

LOWER HOUSE VOTE NEWS FLASH

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

INTERVIEW WITH PREFECTURAL GOVERNOR

TOKYO GAKUEN GETS THROUGH TO KOSHIEN

10 INTERVIEW WITH TOKYO GOVERNOR

#1302

[RECOMMENDED RESTAURANTS]

ITALIAN "MASTROIANNI" (YOKOHAMA STN.)

NOODLES "TENTEN" (SHIN-YOKOHAMA)

15 CHINESE "HORAI" (KANNAI)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

BUCKWHEAT NOODLES "KAWASAKI SOBA" (KAWASAKI)

FIG.14

20 INFORMATION SERVICE

#1401

[NEWS FLASHES]

LOWER HOUSE VOTE NEWS FLASH

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

25 INTERVIEW WITH PREFECTURAL GOVERNOR

TOKYO GAKUEN GETS THROUGH TO KOSHIEN

INTERVIEW WITH TOKYO GOVERNOR

#1402

[RECOMMENDED RESTAURANTS]

CHINESE "HORAI" (KANNAI)

ITALIAN "MASTROIANNI" (YOKOHAMA STN.)

5   NOODLES "TENTEN" (SHIN-YOKOHAMA)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

BUCKWHEAT NOODLES "KAWASAKI SOBA" (KAWASAKI)

FIG.15

10   THRESHOLD VALUE INFORMATION

102 RADIO RECEIVING SECTION

103 CONTROL DATA RECEIVING SECTION

1501 TRANSMISSION STATUS MONITORING SECTION

1502 CELL ID EXTRACTION SECTION

15   1503 CELL ID STORAGE SECTION

105 DATA RECEIVING SECTION

1504 DATA SORT SECTION

107 DATA FORMAT SECTION

108 DISPLAY SECTION

20

FIG.16

START

ST1601 READ ONE DISTRIBUTION DATA ITEM

ST1602 CELL ID EXTRACTION, TRANSMISSION STATUS

25   MONITORING

ST1603 CELL ID CORRESPONDENCE TABLE UPDATING

ST1604 ARRANGE DISTRIBUTION DATA

ST1605 DISPLAY DISTRIBUTION DATA

ST1606 END OF RECEPTION PROCESSING?

END

5   FIG.17

CELL ID   RECEIVED SIGNAL STRENGTH

FIG.18

THRESHOLD VALUE INFORMATION

10   102 RADIO RECEIVING SECTION

103 CONTROL DATA RECEIVING SECTION

104 CELL ID EXTRACTION SECTION

105 DATA RECEIVING SECTION

106 DATA SORT SECTION

15   107 DATA FORMAT SECTION

108 DISPLAY SECTION

1801 DISPLAY SWITCHING SECTION

FIG.19

20   INFORMATION SERVICE

[RECOMMENDED RESTAURANTS]

CHINESE "HORAI" (KANNAI)

ITALIAN "MASTROIANNI" (YOKOHAMA STN.)

NOODLES "TENTEN" (SHIN-YOKOHAMA)

25   JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

[MORE...]

FIG.20

INFORMATION SERVICE

[RECOMMENDED RESTAURANTS]

CHINESE "HORAI" (KANNAI)

5   ITALIAN "MASTROIANNI" (YOKOHAMA STN.)

NOODLES "TENTEN" (SHIN-YOKOHAMA)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

BUCKWHEAT NOODLES "KAWASAKI SOBA" (KAWASAKI)

FRENCH "BONJOUR" (SHINAGAWA)

10   ITALIAN "GRAZIE" (ODAIBA)

FIG.21

THRESHOLD VALUE INFORMATION

102 RADIO RECEIVING SECTION

15   103 CONTROL DATA RECEIVING SECTION

104 CELL ID EXTRACTION SECTION

105 DATA RECEIVING SECTION

106 DATA SORT SECTION

2101 CHANNEL SELECTION SECTION

20   107 DATA FORMAT SECTION

108 DISPLAY SECTION

FIG.22

#2201

25   ... TOKYO GAKUEN GETS THROUGH TO KOSHIEN

INTERVIEW WITH TOKYO GOVERNOR

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN

INTERVIEW WITH PREFECTURAL GOVERNOR

LOWER HOUSE VOTE NEWS FLASH

#2202

...   ITALIAN RESTAURANT "GRAZIE" (ODAIBA)

FRENCH RESTAURANT "BONJOUR" (SHINAGAWA)

BUCKWHEAT NOODLE RESTAURANT "KAWASAKI SOBA"

(KAWASAKI)

CHINESE RESTAURANT "HORAI" (KANNAI, YOKOHAMA)

JAPANESE CONFECTIONERY "DAIBUTU" (KAMAKURA)

FIG.23

#2302

CONGRATULATIONS! YOKOHAMA GAKUIN GETS THROUGH TO

KOSHIEN

#2301

[NEWS FLASHES]

YOKOHAMA GAKUIN GETS THROUGH TO KOSHIEN CH002

INTERVIEW WITH PREFECTURAL GOVERNOR CH002

LOWER HOUSE VOTE NEWS FLASH CH000

TOKYO GAKUEN GETS THROUGH TO KOSHIEN CH001

INTERVIEW WITH TOKYO GOVERNOR CH001

FIG.24

11 TRANSMITTING/RECEIVING SECTION

12 CONTROL SECTION

13 STORAGE SECTION

14 LOCATION ACQUISITION SECTION

15　LOCATION　MEASUREMENT　APPARATUS

17　MOBILE　TERMINAL

5

10